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### PERCUTANEOUS NEPHROLITHOTRIPSY (PCNL) IN SUPINE POSITION: OUR EXPERIENCE

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**INTRODUCTION & OBJECTIVES:** Percutaneous nephrolitothripsy in prone position is a strengthened procedure in the management of renal stones. We have tried to execute percutaneous procedures in supine position in order to evaluate its practicability, efficacy and safety.

**MATERIAL & METHODS:** From March 2004 to October 2005 we performed 71 percutaneous procedures in supine position; renal calculi mean diameter: 25,1 ± 10,8 mm (range: 6 to 50 mm). In 13 cases the access has been realized with progressive Teflon dilators, in 2 cases with One-shot technique, in 19 cases with mini-percutaneous technique (MIPP), in 37 cases with pneumatic dilation; in first three cases the puncture has been performed with ultrasound and radiological combined method, whereas in all following cases only fluoroscopic guidance has been used; in last 4 cases X-ray guided puncture has been done under direct visual control, previous retrograde positioning of a flexible ureterscope in the selected calyx; in 23 cases multiple accesses have been created. We have evaluated operative times, mean stay in hospital and complication rate.

**RESULTS:** In any patients it was necessary to suspend the procedure, to pass to the usual prone position or to convert to open surgery. In 2 patients it was necessary a second look and in 1 patient a third look. All other patients except one resulted stone-free after a single procedure. Main complications have been hemorrhagic, occurred in 6 cases (8,4%); 2/6 pts need blood-transfusion: in 1 case the haemorrhage took place during access dilation, in 1 case happened during lithotripsy and in 1 case in the immediate perioperatory time; in 3 cases it happened after nephrostomic tube retraction, with necessity of a bladder clots drainage and positioning of a mono-J stent. In 2 cases (2,8%) was placed a double pig-tail stent for nephrocutaneous fistula. Except first operations, main operatory times resulted about 25' shorter than analogue procedures in prone position; X-ray exposure and mean stay in hospital resulted similar.

**CONCLUSIONS:** PCNL in supine position presents different advantages: optimal decubitus can be assumed by the awake patient by himself, no risk of vitiated positions, or traumatisms due to the change of bed-position; no thoracic compression occurs, making the procedure safe in patients with cardiorespiratory pathologies associated or obese patients; narcosis can be obtained in an easy way without moving the patient; colon perforation risk is reduced; you can have the complete anterograde and retrograde urinary tract dominion; irrigation through ureteral catheter allows the coming out of stone fragments for gravity and maintains low intrarenal pressures. Anyway, it's a "new way" for many urologists, and it involves a learning curve with initial extension of surgical times. PCNL in supine position has therefore to be regarded as a safe, effective and feasible procedure.

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### PERCUTANEOUS NEPHROLITHOTOMY IN THE SUPINE POSITION

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**INTRODUCTION & OBJECTIVES:** To assess the efficacy and safety of the supine and modified lithotomy position to perform complex endourological procedures.

**MATERIAL & METHODS:** Between 1993 and 2004 we have performed 350 percutaneous nephrolithotomies. The patient is placed in a supine modified lithotomy position with an air bag underneath the operating flank, allowing the simultaneous antegrade and retrograde endourological access. Percutaneous renal access is achieved under fluoroscopic and ultrasound guidance and the percutaneous tract dilated with a high pressure balloon. To carry out this surgical procedure we routinely use Amplatz and ureteral access sheaths, 19Fr. rigid nephroscope, flexible nephroscope, 7.5 flexible ureteroscope, laser Holmium probes and nitinol baskets.

**RESULTS:** The combined use of the Amplatz and the ureteral access sheaths permits to treat staghorn lithiasis through just one percutaneous access, working at low pressures. We consider the optimal access to be the lower calix and the large stone burden is removed with the rigid nephroscope. The liberal use of simultaneous flexible nephroscope and ureteroscopes allows to reach all the renal cavities, treating residual fragments by Holmium laser lithotripsy, or extracting them with nitinol baskets. We have achieved a stone-free rate of 87% with just one surgical act, and with only one percutaneous tract. In 2% of the cases acute bleeding occurred. of these, 2 required nephrectomy to control hemorraging. There have been no injuries to adjacent organs such us bowel, liver, spleen or pleura.

**CONCLUSIONS:** We consider the supine and modified lithotomy position to be superior than the conventional prone position owing to its efficacy and safety when performing the PCNL. It offers obvious advantages from the point of view of the comfort of the patient and the management of the anaesthetic. Permits access to the entire urinary collecting system and combining the use of flexible instruments we can achieve higher stone-free rates with only one percutaneous tract.

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### MINIPERC? NO, THANK YOU

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**INTRODUCTION & OBJECTIVES:** Several studies have definitely demonstrated that stone free rate and high retreatment rate of ESWL is not acceptable in case of renal calculi > than 2,5 cm in size and lower pole calculi with unfavourable radiologic anatomy. The aim of this retrospective study is to compare the results from our Miniperc series with the ones from standard PCNL and Tubeless PCNL in treatment of such renal stones.

**MATERIAL & METHODS:** Since September 1999 we have performed 127 PCNL for renal calculi less than 2,5 in diameter. Among them, 40 were Miniperc (14F Amplatz sheat), 60 were standard PCNL(32F Amplatz sheat) and, starting from June 2002, 27 were Tubeless PCNL (no nephrostomy at the end of procedure in case of absence of major perioperatory intrarenal perforation and bleeding and complete stone clearance on fluoroscopy). Mean stone burden was 2,7 , 3,1 and 3,2 cm2 respectively.

**RESULTS:**

| | OR time (min) | DHb (g/dL)/# of transfusions | Morphine/ Ketorolac (mg) | Visual analogue scale score | Hospital stay (days) | Time to normal activities (days) | Stone free rate |
|---|---|---|---|---|---|---|---|
| Miniperc | 155,5 | 1,5 /(0/40) | 0,4/73,8 | 5,5 | 3,1 | 12,3 | 85% |
| Standard PCNL | 122,1 | 2 / (1/60) | 5,9/91 | 7,4 | 5,1 | 17,4 | 95% |
| Tubeless PCNL | 95 * | 1,7 (0/27)~ | 0,5/41,2 * | 3,4* | 2,2* | 10,9~ | 100%* |

*difference statistically significant between Tubeless PCNL and Miniperc
~ difference statistically not significant between Tubeless PCNL and Miniperc

**CONCLUSIONS:** As already reported in other papers, in our study pain seemed more related to the presence and diameter of nephrostomy than to the diameter of tract during procedure. Moreover, the advantages of small diameter of the sheat are clearly outweighted by worse vision and consequently lengthy operative time and lower stone free rate. As such , in our hands tubeless PCNL presented comparable results in terms of blood loss and transfusion rate with Miniperc but resulted statistically superior to it in terms of shorter OR time, patients' discomfort, hospital stay and stone free rate and. As such, at our department Miniperc has definitely been abandoned and replaced, when possible, by tubeless PCNL.

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### DETECTION OF RESIDUAL STONES AFTER PERCUTANEOUS NEPHROLITHOTOMY: ROLE OF NON-ENHANCED SPIRAL COMPUTED TOMOGRAPHY

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**INTRODUCTION & OBJECTIVES:** To study the role of computed tomography in diagnosis of stones-free staus after percutaneous nephrolithotomy. The impact of the stone density as well as the clinically insignificant residuals upon this approach was addressed.

**MATERIAL & METHODS:** Between Nov. 2004 and Feb. 2005, we prospectively evaluated 100 renal units (98 patients) who underwent percutaneous nephrolithotomy at our institute. The study included 54 male and 44 female patients with mean age of 49.1 ± 11.7. There were 20 staghorn, 18 renal pelvis, 12 calycle renal stones while multiple renal stones were operated upon in 50 cases. The study included 55 opaque stones while 45 were lucent or faint. All the patients were examined within 48 hours after the procedure by plain radiography (KUB), conventional linear tomography (LT), ultrasonography (US) and computed tomography (CT) to detect residual stones. Clinically insignificant residuals were defined as 1 or 2 calycle stones < 5 mm.

**RESULTS:** 38 renal units achieved stone-free status. Clinically insignificant residuals were detected in 26 while significant residuals were diagnosed in 36 that were managed by second look in 21, shock wave lithotripsy in 10 and medically in 5. For faint and lucent stones, sensitivity for overall stone detection was 100% for CT, 11.1% for KUB, 22.2% for LT, 22.2% US ($P < 0.05$). Sensitivity for detection of significant residuals was 100% for CT, 20% for KUB, 33.3% for LT, 20% for US ($P < 0.05$). On the other hand, for radio-opaque stones, Sensitivity for overall stone detection was 100% for CT, 62.9% for KUB, 74.3% LT, 48.6% for US ($P < 0.05$). Sensitivity for detection of clinically significant residuals was 100% for CT, 85.7% for KUB, 95.2% for LT, 57.1% for US ($P < 0.05$ for US while P = N.S. For KUB and LT).

**CONCLUSIONS:** Spiral CT provides the most sensitive diagnostic tool for detection of residual stones after PCNL. Nevertheless, it should not be routinely performed in patients with radio-opaque stones as it yields no significant increase in the diagnosis of clinically significant residuals compared with KUB and LT.